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20 September 2018

Ex Parte

Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service; IB Docket No. 17-95

Dear Ms. Dortch:

On 19 September 2018, Maureen C. McLaughlin, Vice President of Public Policy for Iridium Communications, Inc. ("Iridium"), Brandon Hinton of Wiley Rein LLP, Robert McDowell of Cooley LLP, and I met with Rachael Bender, Legal Advisor to Chairman Pai.

Iridium reiterated its view that the Commission should not permit earth stations in motion ("ESIMs") as an application of the fixed-satellite service ("FSS") in the 29.25-29.3 GHz band because these devices will interfere with Iridium feeder uplinks—and simply instructing the parties to resolve this interference by coordinating their services, a process that has confounded the industry for years, is not enough. Iridium also pointed out that simply saying "earth stations in *motion*" were part of the "*fixed* satellite service" did not resolve the matter.

But Iridium also recognized the Commission's desire to promote new services and encourage the development of innovative approaches to sharing spectrum. Iridium thus proposed several alternatives that would permit significant new use of 29.25-29.3 GHz by ESIMs, while also allowing compatibility analyses to further develop before risking deployments that pose a substantially greater threat of harmful interference.

Iridium explained that the Commission could permit land and marine ESIMs in the band at this time, but defer consideration of aeronautical ESIMs to a further stage of the proceeding. As shown in the enclosed attachment,[1] aeronautical ESIMs can be situated directly in-line with the Iridium feeder-link main beam, and thus produce even greater levels of interference into Iridium satellites. And it does not take many in-line events to create harmful interference to feeder or TT&C uplinks. Aeronautical ESIMs also, obviously, move very fast and change altitude—often quickly—and thus create a dynamic interference environment that currently cannot be

[1] *See* Attachment A; Letter from Scott Blake Harris, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, Secretary, FCC, at 2-3, IB Docket No. 17-95 (filed July 11, 2018) ("Iridium July 11, 2018 Ex Parte"); *see also* Letter from Scott Blake Harris, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, Secretary, FCC, at 7, IB Docket No. 17-95 (filed Jan. 18, 2018); Comments of Iridium at 16-17, IB Docket No. 17-95 (July 31, 2017); Reply Comments of Iridium at 5-7, IB Docket No. 17-95 (Aug. 30, 2017).

"coordinated" to avoid interference in advance.[2] As a result, short-term interference events between aeronautical ESIMs and Iridium satellites will occur frequently, and preventing harmful interference caused by the "time aggregation" of these events will require strategies for coordination that are not yet developed or understood. If greater progress toward coordinating aeronautical operations is achieved, the Commission could permit aeronautical ESIMs in the 29.25-29.3 GHz band at that time.

Alternatively, to facilitate coordination, the Commission could permit all types of ESIMs in the 29.25-29.3 GHz band, but require ESIMs to comply with the "mechanisms" for protecting "Iridium feeder link reception" described in paragraph 56 of the Draft Order.[3] *While the Draft Order, as written, would not make these mechanisms mandatory, they are the only mechanisms identified in the item for operating ESIMs compatibly with Iridium feeder links*.[4] Should the industry develop additional mechanisms for sharing spectrum in the future, the Commission could relax these requirements at that time.

Iridium explained that there would be no harm to the Commission's spectrum utilization objectives by allowing some ESIM deployments now, while deferring action on those that are substantially riskier. Sharing of the 29.25-29.3 GHz band has already been successfully coordinated between Iridium and the fixed-terminal operations of numerous GSO FSS operators—and GSO FSS operators have explained that fixed terminals, and not ESIMs, account for the bulk of their spectrum requirements.[5] Moreover, ESIM network capacity will be constrained on the downlink long before the uplink bandwidth in question might ever be put to use.[6] Iridium thus urged the Commission to consider alternatives that would provide at least some protection to Iridium and its more than one million subscribers, and to the $3 billion investment made in Iridium's next-generation constellation, Iridium NEXT.

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2 Iridium July 11, 2018 Ex Parte at 3.

3 Draft Order ¶ 56.

4 *See id.* (describing two mechanisms that would protect Iridium feeder links by preventing short-term interference events); *id.* ¶ 57 (concluding that "coordination is feasible" due to the availability of the two methods "described in the paragraph above"); *id.* ¶ 57 n.146 (explaining that the parties can address "time aggregation" issues created by multiple, discrete short-term interference events occurring at different times by ensuring that "no ESIM is allowed to ever exceed the acceptable interference level associated with small percentages of time").

5 *See* Letter from John P. Janka and Elizabeth R. Park, Counsel to Viasat, to Marlene H. Dortch, Secretary, FCC, at 2, IB Docket No. 17-95 (filed Aug. 29, 2018) ("The vast majority of Viasat's potential Ka band spectral capacity simply is not available to provide in-flight connectivity.")

6 *See id.* at 3 (explaining that Viasat plans to use ESIM uplinks for low-bandwidth operations such as providing "acknowledgement that streaming data is being received"). *See also Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, et al.*, Report and Order, Order of Proposed Modification, 27 FCC Rcd. 16102, 16135 ¶ 80 (2012) (observing that even mobile broadband services "consume 13 to 30 times more downlink data [than] uplink data").

Finally, Iridium explained that regardless how the Commission ultimately decides the issue, it should consider revising several the Draft Order's analysis of ESIM compatibility in the 29.25-29.3 GHz band in a few key respects.

The Draft Order suggests that the Commission's policies require Iridium to coordinate its feeder links with ESIMs because GSO FSS systems and NGSO MSS feeder links are co-primary in the 29.25-29.3 GHz band.[7] But, as noted above, the Draft Order's logic only holds true if ESIMs are to be recognized as an application of the FSS in the band—and determining whether they should be is the fundamental purpose of this proceeding.

The Draft Order also refers to a "refusal to engage in coordination" by Iridium.[8] There is no basis in the record for this assertion. Iridium has completed more than forty coordinations with other satellite operators to ensure intensive shared use of the spectrum at issue, and has never refused to engage in coordination with any operator over the deployment of permitted services in this spectrum. Even in this proceeding, Iridium has provided detailed technical explanations of the interference problem generated by ESIMs, and of the ESIM operational and deployment parameters necessary to verify that no harmful interference will occur.

Please contact me if you have any questions.

Sincerely,

Scott Blake Harris
Counsel to Iridium Communications, Inc.

cc: Rachael Bender

Attachment

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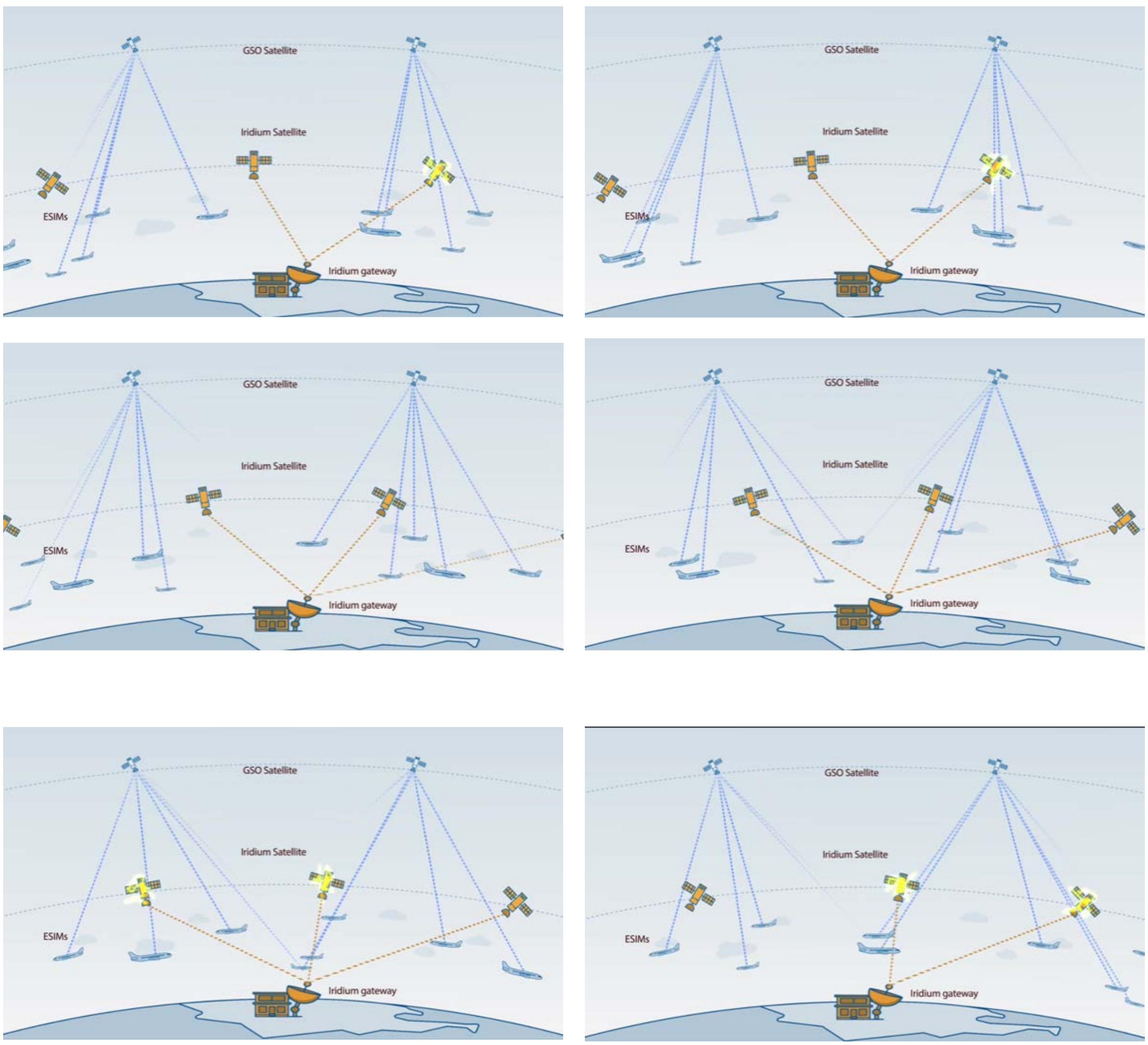
7 Draft Order ¶ 55.

8 *Id.*

Attachment A

Interference from Aeronautical ESIMs into Iridium Feeder Links[1]

September 19, 2018



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[1] These frames were captured from a short video presented at the meeting.